

**REMARKS/ARGUMENTS**

The Office Action mailed September 12, 2005 has been carefully considered and the following response prepared. Claims 19-38 are pending in the application.

Claims 20, 22, 25, 27 and 31-37 were rejected under 35 USC 103 as obvious over Minami et al. (U.S. Patent 4,874,808) in view of Cardarelli et al. (U.S. Patent 3,590,119). The basis for the rejection is that it would be obvious to modify the cycloolefin copolymer composition of Minami et al. in the form of controlled release rubber matrix in view of the teachings of Cardarelli '119 of a controlled release rubber matrix that is safe and non-toxic to humans and higher animal forms and has a release rate over a long period of time and the teachings of Minami et al. that the composition of cycloolefin copolymers can be used as a slow releasing agent for chemical fertilizers.

Applicants traverse this rejection. Minami et al. discloses cycloolefin type random copolymer compositions. Minami et al. discloses that the compositions can be used for numerous purposes, including a slow releasing agent for chemical fertilizers. Minami et al. however, neither discloses microparticles nor an active substance embedded in a matrix.

Cardarelli '119 discloses elastomeric compositions comprised of a larvicide dissolved in vulcanized EPDM elastomer. The elastomers in Cardarelli '119 are a different class of polymers than the thermoplastic polymers used in the present invention and in Minami et al. Specifically, elastomers are rubbers which, by definition, are elastic at room temperature. In contrast, thermoplastics are brittle at room temperature. Additionally, in the system of Cardarelli '119, the compounds to be released to the environment are dissolved in the polymer matrix itself.

The claimed microparticles are not obvious in view of Minami et al. and Cardarelli '119. Minami et al. discloses cycloolefin type random copolymer compositions, but does not disclose microparticles or an active substance embedded in a matrix. Cardarelli '119 does not supply what is missing from Minami et al. Cardarelli '119 discloses rubbers, a different type of polymer, and the active substance is dissolved in the rubber, not embedded in the polymeric matrix. The combined teachings of Minami et al. and Cardarelli '119 still fail to show microparticles comprising at least one active substance and a matrix comprising at least one thermoplastic cycloolefin copolymer wherein the cycloolefin copolymer is a norbornene ethylene copolymer and/or tetracyclododecene-ethylene copolymer and wherein the active

substance has been embedded in the matrix, as claimed by Applicants.

Claims 20, 22, 25, 27 and 31-37 are not obvious over Minami et al. in view of Cardarelli '119. Withdrawal of this section 103 rejection is requested.

At page 4 of the Office Action, the Examiner rejected claims 20, 22-25, 27-29 and 31-37 under 35 USC 103 as being unpatentable over Minami et al. (U.S. Patent 4,874,808) in view of Hermann-Schönherr et al. (U.S. Patent 5,863,986) and Cardarelli et al. (U.S. Patent 3,590,119). The basis of the rejection is that it would have been obvious to modify the cycloolefin polymers of Minami et al. in view of the teachings of Hermann-Schönherr to form controlled release rubber matrix in view of the Cardarelli '119 teachings of a controlled release matrix for releasing active substances.

Applicants traverse this rejection. Minami et al. and Cardarelli '119 have been discussed above. Hermann-Schönherr et al. discloses polymer alloys comprising one or more cycloolefin copolymers, one or more types of core-shell particles and one or more block copolymers. There is no disclosure in Hermann-Schönherr et al. that the polymer alloys can be used as a slow releasing agent for chemical fertilizers or for any other substance.

Claims 20, 22-25, 27-29 and 31-37 are not obvious in view of the combined teachings of Minami et al., Cardarelli '119 and Hermann-Schönherr et al. The combined teachings of Minami et al., Cardarelli '119 and Hermann-Schönherr et al. still fail to show microparticles comprising at least one active substance and a matrix comprising at least one thermoplastic cycloolefin copolymer wherein the cycloolefin copolymer is a norbornenethylene copolymer and/or tetracyclododecene-ethylene copolymer and wherein the active substance has been embedded in the matrix as claimed by Applicants. Withdrawal of this section 103 rejection is requested.

At page 6 of the Office Action, the Examiner rejected claims 20-22, 27 and 31-37 under 35 USC 103 as being unpatentable over Cardarelli et al. (U.S. Patent 4,400,374) in view of Cardarelli et al. (U.S. Patent 3,590,119). This rejection is repeated from the previous Office Action. In the present Office Action the Examiner identified portions of Cardarelli '374 and Cardarelli '119 that allegedly support combining the two references.

Applicants again traverse this rejection. Cardarelli '374 teaches a composition for the controlled release of compounds to the environment from a dispenser made from a thermoplastic polymer, a thermoset polymer or mixtures thereof. The polymer of Cardarelli '374 forms a matrix which contains the compounds to be released to the environment as well as a porosity

inducing agent (i.e., a porosigen). The compounds are held in the porosity of the matrix and/or in the porosigens that are also held in the matrix. The compounds to be released to the environment are not dissolved in the polymer matrix itself. This is in stark contrast to the system described in Cardarelli '119, which uses a different type of polymer (i.e., an elastomer) to create the matrix. In the system of Cardarelli '119, the compounds to be released to the environment are dissolved in the polymer matrix itself. This is a required property of the elastomers that are suitable for use in the system of Cardarelli '119. One of ordinary skill in this art would not use the elastomers of Cardarelli '119 in the composition of Cardarelli '374 because Cardarelli '374 teaches that the problem it is trying to solve is how to achieve controlled release of compounds to the environment using polymer matrices in which the compounds are not soluble. In this regard, Cardarelli '374 actually references Cardarelli '119 and distinguishes the elastomers (i.e., "rubber" matrices) used therein, in which the compounds to be released must be soluble, from the thermoplastic or thermoset polymers ("plastic matrices") that form the matrix of the composition of Cardarelli '374, in which the compounds to be released are not soluble (see column 1, line 41 to column 2, line 3).

To solve the problem of the compounds not being soluble in the plastic matrices, the composition of Cardarelli '374 uses a porosity inducing agent which increases the porosity of the composition over time after the composition is contacted with water. This helps the compound to escape from the plastic matrices. Clearly, the teachings of Cardarelli '374 would provide no motivation to one of ordinary skill in the art to use the elastomers of Cardarelli '119 as the matrix material in the compositions of Cardarelli '374 because Cardarelli '374 teaches away from the use of such elastomers. Specifically, the problem that the invention of Cardarelli '374 is trying to solve is how to create compositions that will release compounds to the environment in a controlled manner without using polymers in which the compounds will dissolve (e.g., the elastomers of Cardarelli '119). Accordingly, it is impossible for Cardarelli '374 to provide the requisite motivation to use the elastomers of Cardarelli '119 as the matrix material for the composition of Cardarelli '374 since this would defeat the very purpose of the invention of Cardarelli '374.

In the remarks in the present Office Action, the Examiner points to passages in Cardarelli '374 and Cardarelli '119 that disclose water-insoluble materials. Nonetheless, the elastomers of Cardarelli '119 are a different class of polymers than the thermoplastic polymers used in the present invention and in Cardarelli '374. Specifically, elastomers are rubbers which, by

definition, are elastic at room temperature. In contrast, thermoplastics are brittle at room temperature. Further, as discussed at length in Cardarelli '374, most of the compounds that are desirable for release to the environment are not soluble in thermoplastics but are soluble in elastomers. These fundamental differences in properties between the elastomers and the thermoplastics do not support the Examiner's position that a person of ordinary skill in the art would substitute one for the other, whether or not the polymers are insoluble in water..

Even assuming *arguendo* that: (1) one of ordinary skill in the art would somehow find motivation to combine the teachings of Cardarelli '119 with the teachings of Cardarelli '374 patent in the manner proposed by the Examiner, and (2) the artisan would somehow have a reasonable expectation of success, both of which applicants strongly disagree with, the combination of Cardarelli '119 and Cardarelli '374 still does not teach all of the limitations of the present claims. The Examiner has acknowledged that Cardarelli '374 does not teach a polymer matrix that is a norbornene-ethylene copolymer and/or tetracyclododecene-ethylene copolymer. Accordingly, it is impossible for the combination of Cardarelli '119 and Cardarelli '374 to teach or suggest all of the limitations of the present claims, since neither patent contains any teaching or suggestion of the use of a norbornene-ethylene copolymer and/or tetracyclododecene-ethylene copolymer as the matrix material.

Claims 20-22, 27 and 31-37 are not obvious in view of Cardarelli '374 and Cardarelli '115. Withdrawal of this section 103 rejection is again requested.

At page 8 of the Office Action, claims 19 and 26 were rejected under 35 USC 103 as being unpatentable over Cardarelli '374 in view of Cardarelli '119 and Kanda et al. (U.S. Patent 4,923,894). This rejection is repeated from the previous Office Action. In the present Office Action, the Examiner further states that Kanda et al. is relied upon solely for the teaching of a polymeric microparticle encapsulating active substance having pesticidal activity, in combination with Cardarelli '374 and Cardarelli '119.

Applicants again traverse this rejection. The Examiner has acknowledged that the Kanda et al. patent does not teach the cycloolefin copolymer of the present claims. The Examiner has stated that Kanda et al. is being combined with Cardarelli '374 and Cardarelli '119 and is being cited solely for the teaching of a polymeric microparticle encapsulating active substance having pesticidal activity. Without agreeing or disagreeing with the Examiner about the teachings of the Kanda et al. patent, Applicants again respectfully submit that this rejection is deficient for the same reasons as discussed above concerning the rejection over the combination of Cardarelli

'119 and Cardarelli '374. Kanda et al. adds no teaching which cures the deficiency in the teachings of Cardarelli '119 and Cardarelli '374 relating to the cycloolefin copolymer of the present claims.

Claims 19 and 26 are not obvious over Cardarelli '374 in view of Cardarelli '119 and Kanda et al. Withdrawal of this section 103 rejection is requested.

Also at page 8 of the Office Action, claims 30 and 38 were rejected under 35 USC 103 as being unpatentable over Cardarelli '374, in view of Cardarelli '119 and Eby, III (U.S. Patent No. 5,409,905). This rejection is also repeated from the previous Office Action.

Applicants again traverse this rejection. The Examiner has stated that she is citing Cardarelli '374 and Cardarelli '119 for the reasons discussed above and is citing the Eby patent solely for the teaching that zinc can be used in the treatment of the common cold. Since the Examiner believes that Cardarelli '374 teaches zinc as one of the trace nutrients that can be released by the matrix of the composition of that patent, she believes that Cardarelli '374 teaches the use of the polymer matrix of that patent in a pharmaceutical composition. Without agreeing or disagreeing with the Examiner about the teachings of Eby and Cardarelli '374, it is again respectfully submitted that this rejection is deficient for the same reasons as discussed above concerning the rejection over the combination of Cardarelli '119 and Cardarelli '374. It is respectfully submitted that the Eby patent adds no teaching which cures the deficiency in the teachings of Cardarelli '119 and Cardarelli '374 relating to the cycloolefin copolymer of the present claims. Accordingly, claims 30 and 38 are not obvious over Cardarelli '374, in view of Cardarelli '119 and Eby. Withdrawal of this section 103 rejection is requested.

In view of the above, applicants believe that claims 19-38 of the present application are in condition for allowance. Reconsideration of the application is respectfully requested and an early Notice of Allowance is earnestly solicited.

Date: *March 13, 2006*

Respectfully submitted,

By *Liza D. Hohenschutz*  
Liza D. Hohenschutz

Registration No.: 33,712  
CONNOLLY BOVE LODGE & HUTZ LLP  
1007 North Orange Street  
P.O. Box 2207  
Wilmington, Delaware 19899  
(302) 658-9141; (302) 658-5614 (Fax)  
Attorney for Applicant